

Notice of Allowability**Application No.**

10/784,111

Applicant(s)

KAMEDA, MASAMI

Examiner

Christopher Biagini

Art Unit

2142

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed July 18, 2008.
2. ☒ The allowed claim(s) is/are 1,3-8,10-14 and 16.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☒ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

/Andrew Caldwell/
Supervisory Patent Examiner, Art Unit 2142

EXAMINER'S COMMENT

Allowable Subject Matter

Claims 1, 3-8, 10-14, and 16 are allowed.

The following is an examiner's statement of reasons for allowance: Applicant's arguments, filed July 18, 2008, are persuasive.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Oath/Declaration

This application presents a claim for subject matter not originally claimed or embraced in the statement of the invention. In particular, the originally filed claims do not contain the limitation "wherein said SAN is configured to couple the first controller and the second controller and establish a path for data block transfer between said first storage unit and said second storage unit using the block transfer protocol between said first storage unit and said second storage unit and another path for file transfer between said first storage unit and said second storage unit using the file transfer protocol through the server and the LAN."

Applicant is now required to submit a substitute declaration or oath to correct this deficiency. The substitute oath or declaration must be filed within the THREE MONTH shortened statutory period set for reply in the "Notice of Allowability" (PTO-37). Extensions of

time may NOT be obtained under the provisions of 37 CFR 1.136. Failure to timely file the substitute declaration (or oath) will result in **ABANDONMENT** of the application. The transmittal letter accompanying the declaration (or oath) should indicate the date of the "Notice of Allowance" (PTOL-85) and the application number in the upper right hand corner.

Examiner's Amendment

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with John Farrell on September 15, 2008.

The application has been amended as follows:

Amendments to the Claims

This listing of claims will replace all prior versions, and listings of claims in the application.

1. (Currently amended) A computer system for transferring data from a first storage unit in a storage system to a second storage unit in a backup storage system via a network, said computer system comprising:

a first controller provided in the storage system, which transfers data stored in said first storage unit, to said second storage unit using a block transfer protocol;

a storage area network (SAN) through which the transfer of data using the block transfer protocol is performed to said second storage unit;

a table provided at a server coupled to the network, wherein the table associates a file composed of a plurality of blocks of data with blocks of data constituting the file; and

a second controller provided at the server, wherein in response to information that identifies a particular data block to be transferred from said first controller via said SAN, identifies a file corresponding to the particular data block using said table and transfers the identified file to said second storage unit via a local area network (LAN) using a file transfer protocol,

wherein said SAN is configured to couple said ~~[[the]]~~ first controller and said ~~[[the]]~~ second controller and establish a path for data block transfer between said first storage unit and said second storage unit using the ~~[[data]]~~ block transfer protocol between said first storage unit and said second storage unit and another path for file transfer between said first storage unit and said second storage unit using the file transfer protocol through the server and the LAN,

wherein said table is provided in said second controller of the server and receives, from said first controller of the storage system, information indicating whether the particular data block has been transferred to said second storage unit of the backup storage system successfully in units of data blocks to allow said second controller to select the another path when the information indicates an unsuccessful transfer of the particular data block.

2. (Canceled)

3. (Previously presented) The computer system according to claim 1 wherein, upon detecting a transfer failure when transferring data, which is stored in said first

storage unit, using the block transfer protocol, said first controller notifies information to said second controller, said information identifying a particular block concerned with the transfer failure.

4. (Original) The computer system according to claim 3 wherein the identified file includes data of blocks other than the block related to the transfer failure.

5. (Previously presented) The computer system according to claim 4 wherein the data of blocks other than the block related to the transfer failure is data that has been transferred by said first controller via the SAN using the block transfer protocol.

6. (Currently amended) A computer system that transfers data from a first storage unit in a storage system to a second storage unit in a backup storage system via a SAN and a LAN, said computer system comprising:

a first controller provided in the storage system that transfers data stored in said first storage unit, to said second storage unit on a block basis via the SAN; and

a second controller provided at a server that transfers data, stored in said first storage unit, to said second storage unit on a file basis via the LAN,

wherein said second controller manages an association between a file composed of a plurality of first blocks of data and the blocks of data constituting the file based on a management table provided at the server defining the association and, upon receiving information identifying a particular data block of the plurality of first blocks to be transferred along a first path from said first storage unit to said second storage unit via the SAN, determines a file including the particular data block using the management table to be transferred along a second path from said first storage unit to said second storage unit via the server and the LAN on a file basis, the file being passed from said first storage unit to said second storage unit via the SAN,

wherein said management table in said [[the]] second controller of the server receives, from said first controller of the storage system, information indicating whether the particular data block has been transferred to said second storage unit of the backup storage system successfully in units of data blocks to allow said [[the]] second controller to select the second path when the information indicates an unsuccessful transfer of the particular data block,

wherein the SAN is configured to couple said first controller and said second controller and establish a path for data block transfer between said first storage unit and said second storage unit using a block transfer protocol between said first storage unit and said second storage unit using a file transfer protocol through the server and the LAN.

7. (Previously presented) The computer system according to claim 6 wherein, when the transfer on a file basis fails, said second controller identifies a plurality of second blocks related to the transfer-failed file and instructs said first controller to transfer data of the plurality of second blocks.

8. (Previously presented) The computer system according to claim 7 wherein said first storage unit comprises a main volume and a sub volume that store the same contents of data and wherein, when a transfer of data stored on said sub volume on a block basis fails, said first controller notifies information identifying a particular block of transfer-failed data to said second controller and, in response to an instruction to transfer data of a plurality of third blocks related to the transfer-failed file from said second controller, transfers data corresponding to the plurality of third blocks stored on said main volume on a block basis.

9. (Canceled)

10. (Currently amended) A data transfer method for transferring data from a first storage unit in a storage system to a second storage unit in a backup storage system via a network using a second controller, said second controller provided at a server and connected via a SAN to the backup storage system and a first controller that manages data stored in said storage system on a block basis using a block address, said second controller associating information identifying the block addresses with a file identifier for managing a file composed of a plurality of blocks on a file basis, the data transfer method comprising:

at said second controller,

in response to receiving from said first controller information identifying the block address of data to be transferred from said first storage unit to said second storage unit along a first path via the SAN, identifying a file identifier associated with the information identifying the block address;

providing information identifying a plurality of block addresses associated with the file identifier to said first controller;

in response to receiving information corresponding to the information identifying the plurality of block addresses from said first controller via the SAN, transferring the data from said first storage unit to said second storage unit along the first path on a file basis via a LAN with the file identifier attached to the data; and

receiving from said first controller information indicating whether the data has been transferred to said second storage unit of the backup computer system unit successfully in units of data blocks to allow the second controller to select a second path by which to transfer the data on a file basis from said first storage unit to said second storage unit when the information indicates an unsuccessful transfer of the data.

wherein the SAN is configured to couple said first controller and said second controller and establish a path for data block transfer between said first storage unit and said second storage unit using a block transfer protocol between said first storage unit and said second storage unit and another path for file transfer between said first storage unit and said second storage unit using a file transfer protocol through the server and the LAN.

11. (Previously presented) The data transfer method according to claim 10 wherein said second controller transfers a management table, which associates the information identifying block addresses with a file identifier, to said other computer system when data is transferred on a file basis.

12. (Original) The data transfer method according to claim 10 wherein the information identifying a block address is a logical block address.

13. (Previously presented) The data transfer method according to claim 10 wherein, upon detecting a failure during transfer of data to a storage system connected to said other computer system on a block basis, said first controller notifies the information identifying a block address to said second controller via the SAN.

14. (Original) The data transfer method according to claim 10 wherein said computer system notifies information identifying a block address to said first controller to request to transfer data on a block basis.

15. (Canceled)

16. (Currently amended) A computer-readable medium storing a program that causes a file server to transfer data from a first storage unit in a storage system to a second storage unit in a backup storage system via a SAN, said file server comprising a second controller connected via a fibre channel to the storage system ~~[[and]], said storage system comprising a first controller provided at a server~~ that manages data stored in said first storage unit on a block basis using a block address, said file server associating information identifying the block addresses with a file identifier for managing a file composed of a plurality of blocks on a file basis,

the program, when executed, performing the following actions:

upon receiving from said first controller information identifying the block address of data to be transferred from said first storage unit to said second storage unit along a first path via a LAN, causing said file server to identify a file identifier associated with the information identifying the block address and provide information identifying a plurality of block addresses associated with the file identifier to said first controller;

upon receiving information corresponding to the information identifying the plurality of block addresses from said first controller, causing said file server to transfer the data from said first storage unit to said second storage unit along the first path on a file basis with the file identifier attached to the data; and

receiving from said first controller information indicating whether the data has been transferred to said second storage unit successfully in units of data blocks to allow said second controller to select a second path by which to transfer the data on a data block basis from said first storage unit to said second storage unit when the information indicates an unsuccessful transfer of the data,

wherein the SAN is configured to couple said first controller and said second controller and establish a path for data block transfer between said first storage unit and said second storage unit using a block transfer protocol between said first storage unit and said second storage unit and another path for file transfer between said first storage unit and said second storage unit using a file transfer protocol through said file server and the LAN.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Biagini whose telephone number is (571) 272-9743. The examiner can normally be reached on weekdays from 8:30 AM to 5:00 PM..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Caldwell can be reached on (571) 272-3868. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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